Module 1: Introduction to R Programming

Case Study

Things you will learn in this case-study:

1. Creating Vectors
2. Creating Lists
3. Creating Data-frames
4. Sub setting Vectors, Lists and Data-frames

Back Ground:

Sam is a Student at a prestigious college and is undertaking the course "Fundamentals of R Programming" for his first semester. His mid-semester exam is nearby and the syllabus for the exam is "Basic Data Structures in R and Sub setting of Data Structures".

Objective:

Consider yourself to Sam, who will be appearing for the exam on "Fundamentals of R Programming". Based on the knowledge you acquired in Module 1, you are expected to complete the below mentioned activities:

You should do the following:

1. Create a vector "Random" which comprises of ten observations, whose:
   - First three observations are normally distributed random numbers with mean '5' and standard deviation '1'
   - Next three observations are normally distributed random numbers with mean '3' and standard deviation '3'
   - Last four observations are normally distributed random numbers with mean '1' and standard deviation '4'

2. Create a vector "LogExpo" which comprises of ten observations, where:
   - First five observations are log values of the first five natural numbers
   - Next five observations are exponentiation values of next five natural numbers

3. Add two vectors "Thousand" and "Negative_thousand", where:
   - Vector "Negative_thousand" is a sequence of integers from '-1000' to '0'
   - Vector "Thousand" is a sequence of integers from '0' to '1000'

4. Store the above result in a new vector and name it as "Final_Thousand". From this data-set:
   - Select the 500th observation
   - Extract the first hundred observations and store them in a new vector "First_Hundred"

- Extract the last hundred observations and store them in a new vector "Last_Hundred"
- Extract all the elements from 321st observation to 764th observation and store them in a new vector "Weird_Set"

5. Create a list "Book_Details" which comprises of:
- 'Book_Name'- A character vector of five observations listing the names of books
- 'Author_Name'- A character vector of five observations listing the names of authors
- 'Book_Cost'- A numeric vector of five observations listing the cost of books

6. From the above list:
- Extract all the three individual vectors by their name
- Extract the name of fourth book
- Extract the name of second author
- Extract the cost of last book

7. Load the inbuilt data-set "women" by using the "data()" command. From this data-set:
- Extract the observation which is present at 6th row, 2nd column
- Extract the last four rows of the data-set
- Extract alternate rows from the data-set

8. Create a "Student" dataset with a minimum of ten rows, which comprises of:
- 'Name'- Name of the student
- 'Department'-Department of the student
- 'CGPA'- CGPA of the student
- 'Placement'- Is the student placed or not(Boolean values)

Submission should include the following:

1. Answers to the above questions.
2. Summary on approach should be documented and submitted for each question.
3. R Code File.